

DOCUMENT RESUME

ED 151 324

SP 012 292

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 TITLE Sibling-Related Teacher Expectancies and their Possible Influence on Classroom Behaviors and Achievement Levels in Seventh Grade English Classes.
 PUB DATE Mar 78
 NOTE 32p.; Paper presented at the Annual Meeting of the American Educational Research Association (Toronto, Canada, March 27-31, 1978)
 EDRS PRICE MF-\$0.83 HC-\$2.06 Plus Postage.
 DESCRIPTORS *Achievement; Achievement Gains; Classroom Research; *Expectation; *Grade 7; Junior High School Students; *Language Arts; Low Achievement Factors; *Performance Factors; *Teacher Behavior
 IDENTIFIERS *Sibling Influence

ABSTRACT

This study hypothesized that teachers would hold natural expectancies--positive or negative--for students' performance from having previously taught students' older siblings in the same class, depending upon older siblings' performance levels. These students would then differ from no-expectancy controls on specific classroom behaviors and achievement variables. Subjects were students in a Grade 7 English class, all of whom had had an older brother or sister who had been a seventh-grade student in the same building within three previous years. On the basis of grade point averages of older siblings' seventh-grade performance, high-, low-, and medium-expectancy level groups were established. Data was collected through classroom observation using the Brophy-Good Dyadic Interaction System, through language arts achievement testing (Minnesota Achievement Examination), and on teacher-assigned grades. Interpretation of the data indicated high-expectancy experimentals received progressively more, and low-expectancy experimentals much less, teacher praise following correct answers throughout the school year than did their corresponding controls. Achievement testing data showed a considerably lower mean for low-expectancy experimentals than for their corresponding controls, supporting the notion that teachers' negative expectancies increase the probability of students' underachievement. (Author/MJB)

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ED151324

Sibling-Related Teacher Expectancies and their
Possible Influence on Classroom Behaviors and
Achievement Levels in Seventh Grade
English Classes

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American Educational Research Association

Annual Meeting

Session # 9.21

Toronto, Ontario, Canada

March 27-31, 1978

Printed in U. S. A.

SP012 292

The notion that one individual's expectation for another's behavior may somehow in part determine what that behavior will actually be is hardly new or surprising, and a wide variety of methods and procedures are to be noted in attempts to study the effects of expectancies in both laboratory and school settings. Perhaps the most familiar of these involves the artificial manipulation of expectancies by means of false information, the procedure used by Rosenthal and Jacobson in their now-classic Oak School study described in Pygmalion in the Classroom (1968).

However, in view of the widespread methodological criticism of this original study (Snow, 1969; Thorndike, 1968; Elashoff & Snow, 1971), as well as the failure of subsequent studies to replicate the positive results claimed by these investigators (Conn, Edwards, Rosenthal, & Crowne, 1968; Evans & Rosenthal, 1969; Claiborn, 1969; Fielder, Cohen, & Feeney, 1971; Jose & Cody, 1971; Fleming & Anttonen, 1971; Mendels & Flanders, 1973), a far more likely area for study appeared to be those environments in which specific types of expectancies might be assumed to have developed naturally within individual teachers with a minimum of artificial manipulation. Such factors, for example, as a teacher's attitude toward a particular sex or racial group (Davis & Slobodian, 1967; Palardy, 1969; Doyle, Hancock, &

Kifer, 1972; Buford, 1973; Alpert & Hummel-Rossi, 1975) or previous contact with other members of the same family in a similar situation (Seaver, 1971) might well be more logical determiners of the ways in which these individuals will tend to react differentially to particular students in classroom situations.

Finally, although this evidence did suggest that teachers' naturally developed expectancies are likely to be reflected both in students' achievement levels and in attitudes toward their teachers and school in general, far fewer attempts had been made to determine the specific observable and quantifiable behaviors by which these differential expectancies are communicated to students during classroom instructional procedures, causing students in turn to conform to what they perceived to be their teachers' expectancies for their high--or low--achievement. Taken as a group, however, these studies do suggest the probability that teachers do respond differentially to students for whom they hold positive or negative expectancies, in terms of their behaviors in eliciting responses from students and in reinforcing performance (Kranz, Weber, & Fishell, 1970; Given, 1974). Moreover, in an extensive series of interrelated studies (Good, 1970; Brophy & Good, 1970; Jones, 1972; Cornbleth, Davis, & Button, 1972; Jeter & Davis, 1973; Good, Sikes, & Brophy, 1973; Evertson, Brophy, & Good, 1973; Brophy & Good, 1974),

Brophy, Good, and their associates indicate a number of general conclusions regarding classroom behaviors of teachers and students. For example:

1. In secondary classrooms, high expectancy students become more dominant in public settings, but lows begin to receive more private contacts with the teacher, possibly indicating increasing inadequacy at higher grade levels.
2. Teachers have found to criticize low expectancy students proportionately more frequently than high expectancy students when they give a wrong answer. Moreover, some studies show that when lows give correct answers, they are less likely to be praised than are highs. In this way, Brophy and Good suggest, low expectancy students may come to feel that their safest strategy under the circumstances is to remain silent and avoid the risk of participating publicly.
3. Teachers have also been noted to respond to the incorrect, don't know, and no response answers of low expectancy students either by giving them the answer or by calling on another student to answer the question. In short, teachers appear to be more willing to accept immediately unsatisfactory performance by lows and to

terminate the contact with them, while they tend to sustain contact with highs in order to give them maximum opportunity to improve their performance.

Taking all of the preceding considerations into account, this study was concerned with isolating and defining one specific type of teacher expectancy within a totally natural, unmanipulated classroom situation, and then determining whether this specific expectancy appeared to affect both classroom behaviors during instruction and achievement levels attained as a result of that instruction. Thus, teachers' differential treatment of students in their classes might result in a greater differential in achievement levels for certain students than would normally have been the case.

Specifically, the study was concerned with natural expectancies which were assumed to have developed in teachers as a result of their having previously taught older siblings of current students. As such, it represented an extension and modification of Seaver's (1971) study. Of primary interest was whether such expectancies could be shown to have an observable and measurable effect on a number of specific classroom behaviors of teachers and students, and on measures of academic achievement of these students, in the direction of the teachers' expectancies. It was assumed that a teacher's expectancies for current students

would correspond to how well their older siblings had performed in the same grade and class and with the same teacher. Thus, if an older sibling had been a high achiever, the teacher's expectancy for the younger sibling would be high; if the older sibling had been a low achiever, the teacher's expectancy for the younger sibling would be low.

Answers were sought to several related questions. First, if a teacher's expectancy, premised on previous knowledge of and experience with an older sibling, is that certain students will achieve more than others, will there be differences in specific observable teacher behavior and student response patterns during classroom instruction, indicating differential treatment of students in the direction of the teacher's expectancy? In view of the previously discussed research findings of Brophy and Good, whose instrument was used in this study, it was hypothesized that students for whom high expectancies were held would receive more public contacts in general than would students for whom low expectancies were held; furthermore, they would receive more teacher praise following correct answers, and their teachers would tend to sustain contact with them following unsatisfactory performance. In contrast, students for whom low expectancies were held

would receive more private contacts in general; they would be criticized more often following incorrect answers, and their teachers would tend to terminate contact with them following unsatisfactory performance. A second question: if a teacher's expectancy is that certain students will achieve more than others, will there be differences in actual measured achievement, in terms of achievement test scores and teacher-assigned grades? Finally, if these differences should occur, will the apparent effect of the teacher's expectancy be greater when older and younger siblings are of the same sex than when they are of different sexes?

Method and Procedures

Subjects

Subjects were students in Grade 7 English classes during the 1975-76 school year in a single junior high school located in a northeastern Ohio suburban school district. All of these students had had an older brother or sister who had been a seventh grade student in the same building within three previous years. The population represented by these students was predominantly white and middle-class, thus ensuring that socio-cultural variables, which were not of concern in this study, could be kept minimal. Relative homogeneity was maintained

among teachers as well as students since hiring practices in the district tended to give preference to local residents rather than outside applicants. Teacher turnover, in addition, was found to be very low. Finally, students who either were EMR or had diagnosed or suspected neurological deficits or learning disabilities were eliminated from the sample

On the basis of grade point average of older siblings when they had been in Grade 7, three relatively equal expectancy levels--high, middle, and low--were established for younger siblings prior to the start of the 1975-76 school year. Although, ideally, an equal number of younger siblings would have been assigned to each of these levels in both the experimental and control groups, restrictions unavoidably imposed by scheduling considerations made this impossible. In this study, therefore:

1. The experimental group consisted of 30 students whose older siblings had been assigned to the same English teacher in Grade 7. These became the students for whom teachers in this study were assumed to hold expectancies ranging from low to high, depending on whether their older siblings had been "low" achievers or "high" achievers.
2. The control group consisted of 73 students whose older siblings had been assigned to different English teachers

in Grade 7. Due to a lack of any previous classroom experience in Grade 7 English with the older siblings of these students, as well as to the fact that the students themselves were new to the junior high school, teachers were assumed to hold no previously established expectancies for their performance in Grade 7 English classes.

Design

The basic design of this study, a $2 \times 3 \times 2 \times 2$ factorial, classified subjects according to all independent variables: (a) level of expectancy, based on older sibling's performance in Grade 7 English class (high, middle, low); (b) expectancy condition (experimental, control); (c) sex of younger sibling; and (d) sex of older sibling (same, different). Criterion measures included (a) specific classroom behavior categories of the Brophy-Good Dyadic Interaction System, modified for use on the junior high school level, (b) total score comprised of four subtest scores of the Minnesota High School Achievement Examination in Grade 7 Language Arts, Form FI Revised; and (c) teacher-assigned English grades for each six-week period plus the final course grade.

Kuhlmann-Anderson group IQ scores, which were available for most subjects, were used as a control variable. Analysis of the

scores of older and younger sibling groups by a t - test of dependent means indicated that the difference between these two groups was not significant ($t = 0.773$). Similarly, a t - test of independent means, unequal samples performed on the IQ scores of experimental and control younger siblings indicated that the difference between these two groups was not significant ($t = 1.92$).

Data Collection

Classroom observation data on specific teacher and student classroom behaviors were collected during two three-day periods in each of the ten English classes, using the Brophy-Good Dyadic Interaction System, an instrument expressly designed to measure teacher expectancies, as indicated by differential treatment of individual students by the teacher; thus, dyadic interaction is the unit of analysis rather than interaction of the teacher with the classroom group as a whole. Moreover, this system carefully preserves the teacher solicitation - student response - teacher response sequence which is essential if one wishes to examine the possibility of prophecy fulfillment in the classroom. Fall observations were made in early November and spring observations were completed in late March, comprising a total observation time of approximately 60 hours.

At the end of the 1974-75 school year, written permission had been obtained from those four teachers who would be teaching

Grade 7 English classes during the 1975-76 school year; all of these individuals agreed to participate in the study with the stipulation that they would be fully informed of both its purposes and results following the completion of data collection and analysis.

Just prior to the scheduled fall classroom observations, participating teachers were asked only for seating charts of their classes and were told only that the study involved observing different classroom behaviors of both teachers and students in English classes. No further information was either given to them or requested of them until all data had been collected. It was felt that any attempts to obtain information from teachers prior to observation sessions--for example, asking them to rank class members according to expected achievement--would create the risk of presensitizing these teachers to the experimental situation, even though no further specific information had been supplied to them. In such a case, any results appearing to be positive indications of the operation of teacher expectancy effects could equally well be interpreted as mere artifacts of the experimental situation.

In order to ensure that classroom environments would remain as normal as possible, no observation sessions were scheduled for Mondays, Fridays, or on days immediately preceding or following

a holiday or vacation. During the scheduled six days of observations, observers worked in pairs with each recording the behaviors of half the students in the class to which they had been assigned for a particular day. The behaviors of all students in the ten English classes were recorded individually by means of row and seat numbers on coding sheets. Subsequently, all coding sheets containing raw data were collected by the principal investigator immediately after each day's observations had been concluded, and those data pertaining to students in experimental and control groups were sorted out by matching row and seat numbers on the coding sheets to names on the seating chart for each class. Since this sorting process was handled entirely by the principal investigator and none of the coding sheets were ever seen by any of the participants or observers again, it was possible to keep both teachers and observers from being cued as to the identity of the specific students who were of concern in this study.

In early May, four subtests of the Minnesota Achievement Examination in Grade 7 Language Arts was administered to all students as a measure of achievement in this specific content area, with testing being confined to the areas of grammar, usage, and study skills - the content of which could be assumed to vary negligibly from one teacher to another. No attempt was made to

measure achievement in the literature facet of the curriculum since the approach to this area in the cooperating school was generic and thematic, with the choice of specific content material being left to individual teachers. Thus, it was unlikely that any test of specific literary content or interpretation could fairly be given to all Grade 7 students with a reasonable expectation that achievement levels obtained would be equally valid for all. All participating teachers were given the chance to review the proposed testing instrument prior to the testing date, and all agreed that the four subtests were a valid measure of actual curriculum content taught during the year. (The Kuder-Richardson 20 estimate of reliability for the total score of these four subtests was .801).

A final group of data on teacher-assigned grades were collected as they were issued throughout the school year at six-week intervals; the final course grades were collected from grading sheets turned in to the school office on the last day of school in June.

Results

Data for all criterion measures were analyzed by means of a five-way fixed effects analysis of variance with repeated measures to determine significant main effects and interactions

of the independent variables of this study. A time factor was added to the analysis when appropriate, in all observation data (fall to spring observation periods) and teacher assigned grades (periods throughout the school year). The Scheffe method of multiple comparisons was used to test for the significance of a contrast among means occurring in significant interactions.

In addition, because this study necessitated working with intact groups of unequal size and because the loss of data in any cells of the design was not directly related to the experimental variables, data were analyzed by the method of unweighted means. This method considers each cell in the experiment as if it contained the same number of observations as all other cells with regard to the computation of main effects and interaction effects (Winer, 1962, p. 222).

When all data had been examined, it became apparent that while certain findings appeared to indicate support for the expectancy hypothesis, other results were not consistent with those previously noted by other investigators.

Insert Table 1 about here

For example, in terms of public response opportunities afforded to students, no particular differences between groups were

noted which would indicate that teachers were providing more opportunities to answer classroom questions to those students for whom they were assumed to hold high expectancies and fewer opportunities to those students for whom low expectancies were assumed. Similarly, in total numbers of private contacts for each group, there was no indication that teachers were treating differentially those students for whom they were assumed to hold low expectancies, in terms of offering these students more private contacts or of being receptive to such contacts from the students themselves. In short, high and low expectancy students appear to have been about equally likely to receive both public and private contacts from their teachers.

Although there were a greater number of public contacts observed in the fall than were observed in the spring, along with a corresponding significantly greater number of private contacts observed in the spring ($F = 4.25$, $p < .05$), this change over time did not appear to appreciably alter the relative proportions of these two types of contacts to high and low expectancy students. Rather, the observed difference was interpreted as being due almost entirely to the chosen instructional strategies for those particular periods of classroom time.

With regard to teachers' willingness to sustain contact with students following incorrect answers in order to give them

maximum opportunity to perform successfully, once again the initial expectations of this study, which had been based upon previous reported observational research results, were not confirmed. In general, teachers were found during the spring observation period to be exhibiting a significantly greater willingness to sustain contact with all students ($F = 5.51$, $p < .05$). More importantly, they appeared to be equally willing to sustain contact with both high and low expectancy students, although analysis of data from fall observations had suggested a possible tendency in the expected direction--with highs receiving more sustaining contact from their teachers than their corresponding controls, and low receiving less. Spring data, in fact, indicated a direct reversal of the fall pattern.

A similar, but more pronounced indication of this same tendency is noted with regard to teachers' use of terminating feedback following incorrect answers. It may be seen in data from fall observations that classroom behaviors here appear to be in a direction consistent with the assumed teacher expectancies in this study. Highs were indeed receiving less--and lows much more--terminating feedback following incorrect answers than were their corresponding controls. However, a comparison of these results with data obtained during spring observations indicates a direct reversal of this pattern of teacher terminating

feedback. Thus, even if the originally assumed expectancies were affecting teachers' feedback behaviors early in the school year, these expectancies appear to be unstable over time, so that teachers, as the year progressed, came to operate less on what may have been their original expectancies and more on their progressive experience with current students in their classes.

On the other hand, a number of other findings appear to indicate some positive support for the teacher expectancy hypotheses in this study. With regard to teachers' use of praise following correct answers to teacher-posed questions, it can be seen that data from fall observations present no clear differentiation between high and low experimental group students and their corresponding controls. However, a comparison with spring observation data reveals first, a significant increase in the total amount of this teacher behavior observed ($F = 17.60$, $p < .01$). Second, a decided change is to be noted in the relative amounts of praise afforded to experimental and control groups of high and low levels. By spring observations, it may be seen that highs were now receiving considerably more praise for their correct answers than were control students of a corresponding level. Specifically, while highs were receiving praise for approximately every third correct answer, their corresponding controls were being praised less than one time out

of four. More importantly, lows appear to have received praise from their teachers only about once for every ten correct answers given, while their corresponding controls were praised by the teacher approximately once every four times.

Obviously, this finding would have been predicted by the teacher expectancy hypothesis and it suggests an unfortunate implication. Teacher praise following correct answers is surely the most frequent and most obvious kind of verbal reinforcement a teacher can give. Assuredly, behavior patterns such as appear to have been indicated here, if continued over an extended period of time, could not help but have a thoroughly demoralizing effect on just those students who are most in need of encouragement, and whose successful performance teachers should be most concerned with encouraging.

One additional factor related to teachers' greatly increased use of praise in the spring is that participating teachers may possibly have come to believe that the main purpose of this study was to measure "good" teacher classroom behaviors, since an inservice workshop on this topic had been held at the school shortly before the scheduled spring observation period.

One final result--in terms of desirable teacher behaviors in the classroom--was the extremely low incidence in both fall and spring observation periods of teachers' use of criticism

following incorrect student answers. This particular teacher behavior was so infrequently noted that it was impossible to infer anything from the data regarding possible differential treatment of experimental and control students. If, as other investigators have noted, teachers tend to criticize more frequently the incorrect answers of those students for whom they hold low expectancies, the present study can neither support nor challenge these findings.

Insert Tables 2 and 3 about here

Analysis of the results of achievement testing with the instrument previously described revealed a significant difference ($F = 3.87$, $p < .05$) between the mean score of low-level students and means of both middle and high level students. More important, however, a further analysis of these levels by experimental-control grouping illustrates a more interesting result of this study. An examination of means presented in Table 3 indicates that the significant difference observed is apparently due in large part to the particularly low mean score for those students for whom the teacher was assumed to hold low expectancies, rather than to their corresponding controls. This result was not explainable in terms of any group differences

in tested IQ levels, since as previously noted, group IQ test data had been available and had been used as a control variable in this study. This result of achievement testing is considered to be particularly important in that it is this variable that is most likely to be reflecting the teacher's prophecy fulfillment.

The analysis of teacher-assigned grades for students in experimental and control groups do not appear to indicate that teachers were differentiating according to their assumed expectancies in terms of their grading procedures.

Insert Table 4 about here

Finally, some data did suggest that positive indications of the operation of teacher expectancies may be enhanced if older and younger siblings are of the same sex rather than of different sexes. Table 4 illustrates that apparently, teachers' use of praise following correct answers was enhanced for highs if their older siblings had been of the same sex, a finding which remained stable throughout the school year. A corresponding disadvantage is also noted for lows during fall observations, but not in the spring.

Discussion

To summarize briefly those findings directly related to the main concerns of this study, it is in the more "public" types of classroom contacts, more specifically in this study teachers' sustaining and terminating feedback responses to student answers to classroom questions, that contraindications of assumed teacher expectancies may be noted. While in the fall, there was some indication that teachers' behavior may have been influenced to some extent by the expectancies they were assumed to hold, by the spring of the year there was an obvious reversal of earlier behavior patterns. Clearly, teacher expectancies did not, in these instances, remain stable over time, and appear to have been altered as teachers' perceptions of and experience with current students increased.

Other findings, however, appear to suggest a relationship between specific behaviors and the assumed teacher expectancies of this study. In terms of teacher praise following correct answers the most apparent kind of verbal reinforcement a teacher can give, teachers by the spring of the school year appear to have begun to favor highs and to discriminate against lows in rewarding students for this desirable type of classroom behavior. This result is precisely as predicted by the expectancy hypothesis.

Similarly, achievement testing resulted in a particularly

low mean for low experimental students, as compared to their corresponding controls. Thus, some evidence suggests a fulfillment of the teachers' prophecy--at least with regard to those students for whom they were assumed to hold low expectancies. The fact that highs scores lower on an average than their corresponding controls suggests that teachers' expectancies, if they are present as assumed, are less likely to affect the test performance of students for whom high expectancies are held.

The obvious conclusion, when both the teacher praise variable and the achievement testing results are considered, is that teachers' expectancies are more likely to be a significant factor with students for whom low expectancies are held. Even though high teacher expectancies may be of no particular benefit to students for whom they are held, low teacher expectancies appear in this study to be decidedly detrimental to students. The implication here is obvious and unsettling. While most teachers may consciously--and willingly-- exert efforts to improve even more the achievement of those students for whom they hold high expectancies, the real problem lies at the other end of the spectrum. Rather than exerting concerted efforts to alleviate this problem, it would appear here that teachers--albeit unconsciously--may by their classroom behaviors be increasing the probability for underachievement of those students for whom

they hold low expectancies, the students whose improved performance they should, if anything, be most interested in encouraging and rewarding. This is perhaps the most important area for further research on the relationship of teacher expectancies and student achievement levels, and the means by which these expectancies are transmitted in classrooms. As noted earlier, the transmission of high expectancies to students is not the critical issue, since these students will very likely achieve regardless of teachers' preconceived notions for their success. Rather, if it is students for whom low expectancies are held who are most sensitive to those unconscious behaviors that communicate a teacher's expectancies for success--or more likely, failure--uncovering more of these specific behaviors and the precise conditions under which they tend to operate is a task well worth undertaking.

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Table 1

Obtained Means for Classroom Behavior Variables by
Experimental-Control Grouping and by Expectancy Level

Classroom Behavior	Fall/Level						Spring/Level					
	High		Middle		Low		High		Middle		Low	
	E	C	E	C	E	C	E	C	E	C	E	C
	(n=8)	(n=30)	(n=13)	(n=26)	(n=8)	(n=16)	(n=8)	(n=30)	(n=13)	(n=26)	(n=8)	(n=16)
Total Public Contacts	9.83	8.17	7.72	11.35	6.00	7.54	6.50	6.96	7.25	8.13	7.42	6.71
Total Private Contacts	2.40	1.31	2.53	2.21	1.46	2.12	3.04	1.89	2.13	2.34	2.96	3.73
% Correct Answers/ Teacher Praise	6.46	5.92	7.60	4.79	9.29	7.31	37.92	22.64	15.57	21.90	10.16	27.04
% Wrong Answers/ Teacher Criticism	16.67	0.00	0.00	7.92	0.00	0.00	0.00	0.00	25.00	8.75	8.33	0.00
% Wrong Answers/ Sustaining Contact	12.50	11.25	6.25	5.63	0.00	2.50	10.42	24.84	14.06	8.40	29.17	16.94
% Wrong Answers/ Terminating Contact	29.17	46.37	53.13	40.63	79.17	37.50	56.25	31.59	73.44	49.10	37.50	53.06

Table 2

Table of Scheffe' Results Comparing Means of
Scores on the Minnesota Achievement
Examination by Expectancy Levels

	Means		
	High = 28.07 (<u>n</u> = 28)	Middle = 27.63 (<u>n</u> = 34)	Low = 22.30 (<u>n</u> = 24)
Mean _{middle}	.44		5.33*
Mean _{low}	5.77*		

* $p < .05$.

Table 3

Obtained Means for Minnesota Achievement Examination
Total Score and Teacher-Assigned Final Grades
by Experimental-Control Grouping and by
Expectancy Level

Source	Level					
	High		Middle		Low	
	E	C	E	C	E	C
Minnesota Achievement Examination	27.13 (<u>n</u> = 9)	29.01 (<u>n</u> = 29)	28.55 (<u>n</u> = 11)	26.70 (<u>n</u> = 23)	19.50 (<u>n</u> = 7)	25.10 (<u>n</u> = 17)
Teacher-Assigned Final Course Grades ^a	8.70 (<u>n</u> = 9)	9.94 (<u>n</u> = 30)	7.96 (<u>n</u> = 13)	8.04 (<u>n</u> = 26)	6.05 (<u>n</u> = 8)	7.88 (<u>n</u> = 17)

^aGrades were tabulated according to the following numerical system:

A+ = 14, A = 13, A- = 12, ... F = 01.

Table 4

Table of Obtained Means for Percentage of Correct
Answers followed by Praise in Fall and Spring
Observations by Experimental-Control Same-
Sex Grouping and by High and Low
Expectancy Levels

Group	Level	
	High	Low
<u>Fall Observation</u>		
Experimental Same Sex	12.92 (6.46) ^a	3.58 (9.29)
Control Same Sex	3.35 (5.92)	11.11 (7.31)
<u>Spring Observation</u>		
Experimental Same Sex	65.42 (37.92)	13.17 (10.16)
Control Same Sex	24.35 (22.64)	17.08 (27.04)

^a Numbers in parentheses are obtained means for total group.